

WHAT IS CLAIMED IS:

1. An electronic device having at least one liquid crystal device, said liquid crystal device comprising:

a pixel electrode comprising a metal formed over a substrate;

5 a reflection layer comprising a dielectric multi-layer film, formed on said pixel electrode,

wherein a surface of said pixel electrode has convex or concave portions.

2. An electronic device according to claim 1, wherein said dielectric
10 multi-layer film comprises a first thin film having a lower refractive index and a second thin film having a higher refractive index, a film thickness d_1 of said first thin film is so adjusted as to satisfy $400 \text{ nm} \leq \lambda_1 \leq 500 \text{ nm}$ ($\lambda_1 = 4n_1d_1$), where the film thickness and the refractive index of said first thin film are d_1 and n_1 , respectively, and a film thickness d_2 of said second thin
15 film is so adjusted as to satisfy $450 \text{ nm} \leq \lambda_2 \leq 700 \text{ nm}$ ($\lambda_2 = 4n_2d_2$), where the film thickness and the refractive index of said second thin film are d_2 and n_2 , respectively.

3. An electronic device according to claim 1 or 2, wherein said pixel
electrode comprises a material selected from the group consisting of
20 aluminum and silver.

4. An electronic device according to any one of claims 1 and 2, wherein said pixel electrode is formed on an interlayer insulating film in contact therewith, said interlayer insulating film being provided with a

concave or convex portion formed on its surface.

5 5. An electronic device according to claim 1 or 2, wherein a liquid crystal is sealed between a pair of substrates, said liquid crystal display device comprising said pixel electrode arranged in a matrix manner on one substrate, a thin film transistor connected to said pixel electrode, and a reflection layer.

6. A method of manufacturing a liquid crystal display device, comprising the steps of:

forming a switching element on a substrate;

10 forming a pixel electrode connected to said switching element, said pixel electrode being provided with a concave or convex portion on its surface; and

forming a dielectric multi-layer film formed of a dielectric film on the top surface of said pixel electrode.

15 7. A method of manufacturing a liquid crystal display device according to claim 6, wherein the step of forming said pixel electrode having the concave or convex portion on its surface comprises a step of forming a pixel electrode on an interlayer insulating film having the concave or convex portion on its surface.

20 8. A method of manufacturing a liquid crystal display device according to claim 6, wherein the step of forming said pixel electrode having the concave or convex portion on its surface comprises a step of etching the surface of said pixel electrode.

9. A method of manufacturing a liquid crystal display device according to claim 6, wherein the step of forming said pixel electrode having the concave or convex portion on its surface comprises a step of subjecting said pixel electrode to an anodic oxidation.

5 10. A method of manufacturing a liquid crystal display device according to claim 6, wherein the step of forming said pixel electrode having the concave or convex portion on its surface comprises a step of forming protrusions by heating.

11. A method of manufacturing a liquid crystal display device
10 according to any one of claims 6 to 10, wherein the step of forming said dielectric multi-layer film comprises a step of coating by spin coat.

12. A method of manufacturing a liquid crystal display device according to any one of claims 6 to 10, wherein the step of forming said dielectric multi-layer film comprises a step of a sputtering method or a
15 vacuum evaporation method.

13. An electronic device according to claim 1 wherein said electronic device is a personal computer, which has a key board operationally connected with said liquid crystal device.

14. An electronic device according to claim 1 wherein said
20 electronic device is a video cameral.

15. An electronic device according to claim 1 wherein said electronic device is a mobile computer.

16. An electronic device according to claim 1 wherein said electronic device is a goggle-type display.

5 17. An electronic device according to claim 1 wherein said electronic device is a player for operating at least one of DVD or CD.

18. An electronic device according to claim 1 wherein said electronic device is a digital camera.

19. An electronic device according to claim 1 wherein said
10 electronic device is a projector.

20. An electronic device according to claim 1 wherein said electronic device is a front type projector.

21. An electronic device having at least one active matrix liquid
15 crystal device comprising:

a substrate;

a switching element comprising at least one thin film transistor
formed over said substrate;

an interlayer insulating film formed over said substrate and
20 said switching element;

a light reflective pixel electrode formed over said interlayer
insulating film wherein said light reflective pixel electrode has a plurality of

projections on its surface;

a multi-layer film comprising a first film and a second film formed on said first film wherein said second film has a higher refractive index than said first film.

5 22. An electronic device according to claim 21 wherein a maximum height of said projection from the surface of said pixel electrode is greater than 1 μm .

 23. An electronic device according to claim 21 wherein said electronic device is a personal computer, which has a key board
10 operationally connected with said liquid crystal device.

 24. An electronic device according to claim 21 wherein said electronic device is a video cameral.

 25. An electronic device according to claim 21 wherein said electronic device is a mobile computer.

15 26. An electronic device according to claim 21 wherein said electronic device is a goggle-type display.

 27. An electronic device according to claim 21 wherein said electronic device is a player for operating at least one of DVD or CD.

 28. An electronic device according to claim 21 wherein said
20 electronic device is a digital camera.

29. An electronic device according to claim 21 wherein said electronic device is a projector.

30. An electronic device according to claim 21 wherein said
5 electronic device is a front type projector.

31. An electronic device having at least one active matrix liquid crystal device comprising:

- a substrate;
- a switching element comprising at least one thin film transistor
10 formed over said substrate;
- an interlayer insulating film formed over said substrate and said switching element;
- a light reflective pixel electrode formed over said interlayer insulating film wherein said light reflective pixel electrode has a plurality of
15 projections on its surface;
- a multi-layer film comprising a first film with a refractive index of 0.7 or less and a second film formed on said first film wherein said second film has a refractive index of 1.8 to 6.0.

32. An electronic device according to claim 31 wherein a maximum
20 height of said projection from the surface of said pixel electrode is greater than 1 μm .

33. An electronic device according to claim 31 wherein said electronic device is a personal computer, which has a key board

operationally connected with said liquid crystal device.

34. An electronic device according to claim 31 wherein said electronic device is a video camera.

35. An electronic device according to claim 31 wherein said
5 electronic device is a mobile computer.

36. An electronic device according to claim 31 wherein said electronic device is a goggle-type display.

37. An electronic device according to claim 31 wherein said electronic device is a player for operating at least one of DVD or CD.

10 38. An electronic device according to claim 31 wherein said electronic device is a digital camera.

39. An electronic device according to claim 31 wherein said electronic device is a projector.

15 40. An electronic device according to claim 31 wherein said electronic device is a front type projector.

41. An electronic device according to claim 31 wherein the first film comprises a material selected from the group consisting of SiO_2 , MgF_2 , Na_3AlF_6 , acrylic, and polyimide and the second film comprises a material
20 selected from the group consisting of TiO_2 , ZrO_2 , Ta_2O_5 , ZnS , ZnSe , ZnTe , Si , Ge ,

Y_2O_3 and Al_2O_3 .